

WHAT IS CLAIMED IS:

1. An antimicrobial composition comprising:

- (a) a protonated compound, said compound comprising the structure:



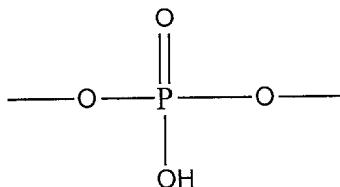
wherein X and Z are end blocking agents and Y is a phosphorous containing moiety with one or more protonation sites, and wherein the compound comprises one or more exogenous protons introduced to reactive sites on said molecule; and

- (b) an excipient.

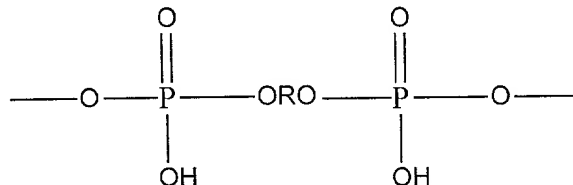
2. The antimicrobial composition of **claim 1**, wherein X and Z are the same.

3. The antimicrobial composition of **claim 1**, wherein X and Z are different.

4. The antimicrobial composition of **claim 1**, wherein Y comprises the structure:

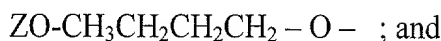
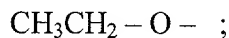
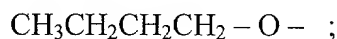


5. The antimicrobial composition of **claim 1**, wherein Y comprises the structure:



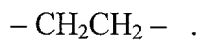
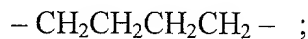
where R comprises a difunctional alkyl, aryl, alkenyl, alkylaryl, alkylalkenyl, arylalkenyl or alkylarylalkenyl group of from 1 to about 20 carbons.

6. The antimicrobial composition of **claim 5**, wherein X or Z comprises a structure selected from the group consisting:

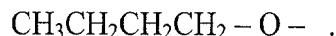


wherein X and Z are blocking groups.

7. The antimicrobial composition of **claim 5**, wherein R comprises a structure selected from the group consisting:



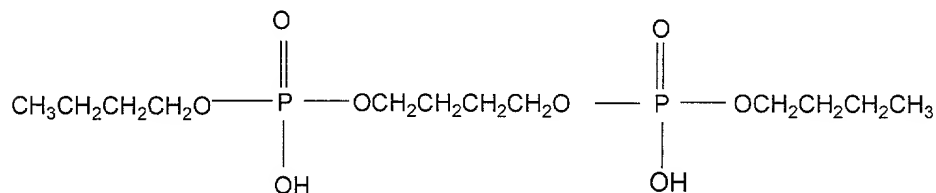
8. The antimicrobial composition of **claim 5**, wherein X and Z comprise:



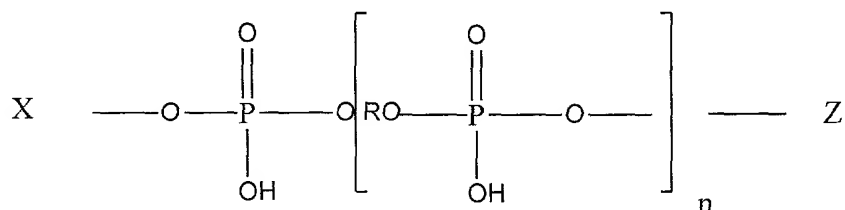
9. The antimicrobial composition of **claim 8**, wherein R comprises:



10. The antimicrobial composition of **claim 5**, wherein said protonated compound has the structure:



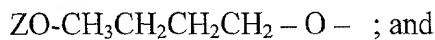
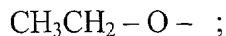
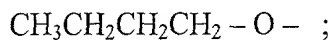
11. The composition of **claim 1**, wherein the carrier comprises one or more compound selected from the group consisting of: emollients, lubricants, emulsifying agents, thickening agents, and humectants.
12. An antimicrobial composition comprising,
- (a) a protonated compound comprising the structure:



wherein X and Z are end blocking agents and n is an integer of from 1 to 20 and each R is independently selected from the group consisting of: an alkyl, an aryl, an alkenyl, an alcohol, a phenol, and enol, and further wherein the compound comprises one or more exogenous protons introduced to reactive sites on said molecule; and

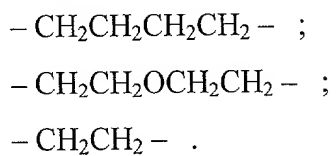
- (b) an excipient.

13. The protonated compound of **claim 12**, wherein X or Z comprises a structure selected from the group consisting:

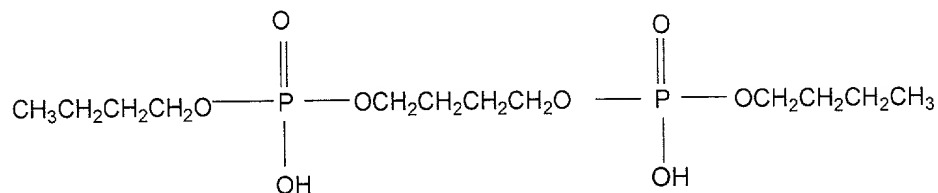


wherein X and Z are blocking groups.

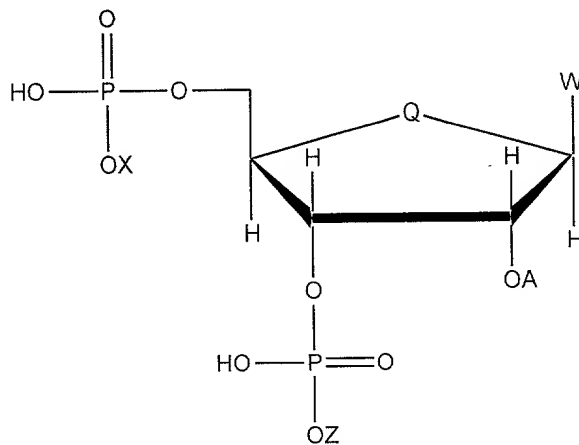
14. The protonated compound of **claim 12**, wherein R comprises a structure selected from the group consisting:



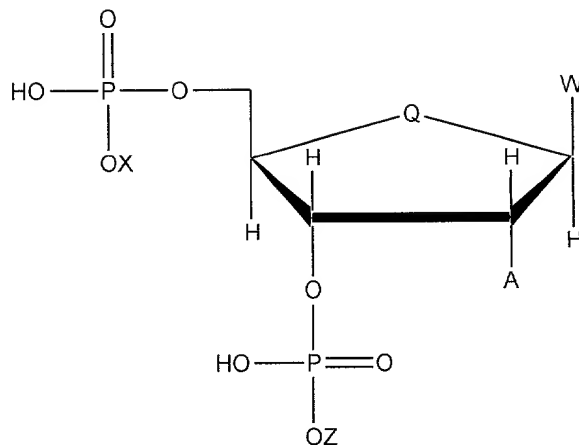
15. The antimicrobial composition of **claim 12**, wherein said protonated compound has the structure:



16. An antimicrobial composition comprising,
(a) a protonated compound comprising the structure:



or



wherein:

X and Z are end blocking groups that may be the same or different;

Q is selected from the group consisting of O, S, P-H, P-OH, P-alkyl, P-aryl, N-H, N-OH, -alkyl, N-acyl and N-aryl;

A is H, alkyl, alkoxy, alkyl-(O-alkyl), aryl, alkenyl, alkanol, phenol, or enol; and W is H, or a purine or pyrimidine, or a modified analogue of a purine or pyrimidine;

wherein the compound comprises one or more exogenous protons introduced to reactive site(s) on said molecule; and

(b) an excipient.

17. The antimicrobial composition of **claim 16**, wherein X or Z comprises a structure selected from the group consisting:

$\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2 -$;

$\text{CH}_3\text{CH}_2\text{CH}_2 -$;

$\text{CH}_3\text{CH}_2 -$;

$\text{HO-CH}_3\text{CH}_2\text{CH}_2\text{CH}_2 -$;

$\text{XO-CH}_3\text{CH}_2\text{CH}_2\text{CH}_2 -$; and

$\text{ZO-CH}_3\text{CH}_2\text{CH}_2\text{CH}_2 -$;

wherein X and Z are blocking groups.

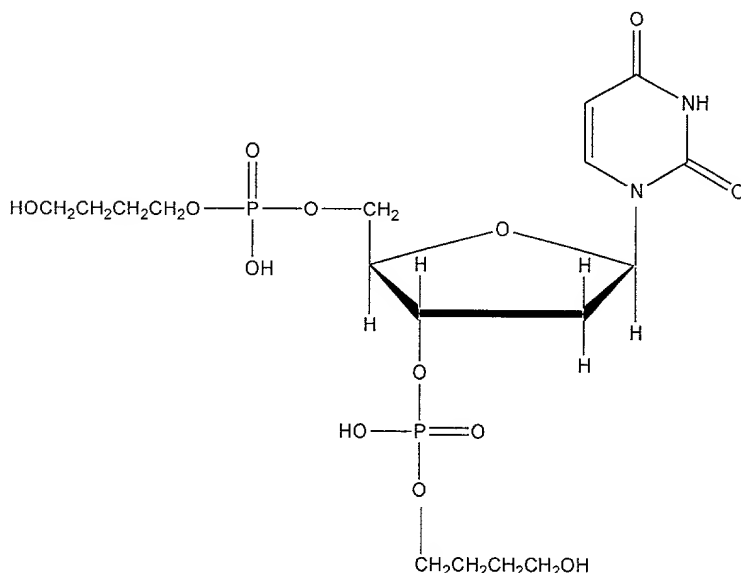
18. The antimicrobial composition of **claim 16**, wherein A comprises a structure selected from the group consisting:

- H ;
- CH₃ ;
- CH₂CH₂OCH₂CH₃ ;
- CH₂CH₃ .

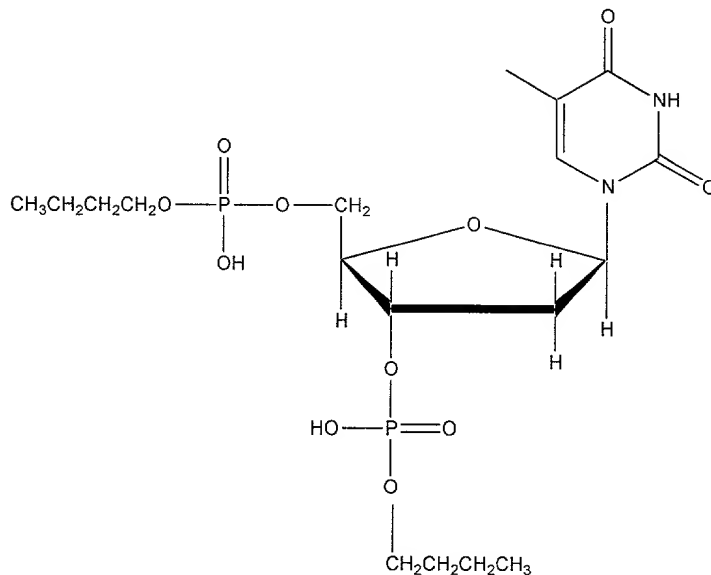
19. The antimicrobial composition of **claim 16**, wherein W is an H.

20. The antimicrobial composition of **claim 16**, wherein W is selected from the group consisting of: a pyridine, a purine, pyrazine, triazine, 2-aminoadenosine, theobromine, caffeine, theophylline, uric acid, indole, acridine, indazole, phenoxazine, phenazine, phenothiazine, quinoline, isoquinoline, quinazoline, pteridine, caprolactam, and a nitrogen-containing heterocyclic.

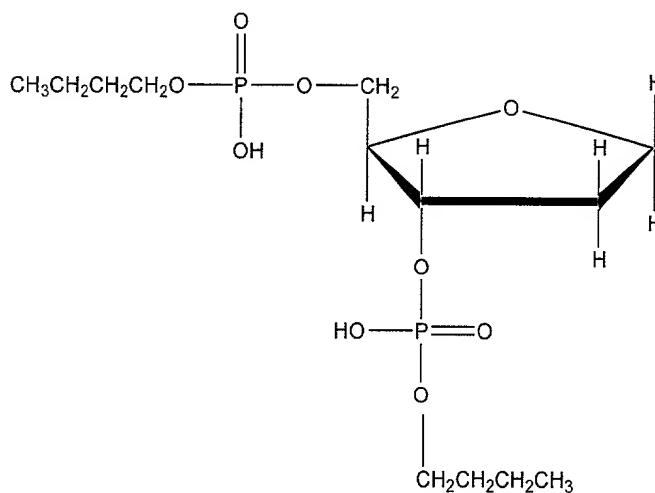
21. The antimicrobial composition of **claim 16**, which has the structure:



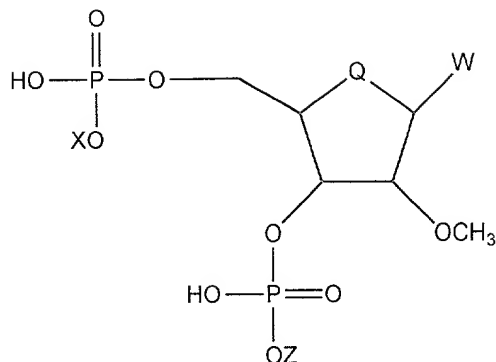
22. The antimicrobial composition of **claim 16**, which has the structure:



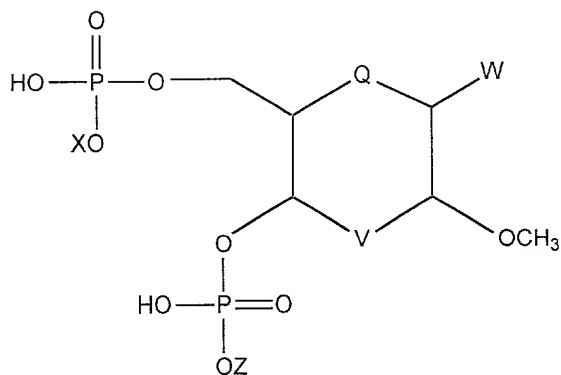
23. The antimicrobial composition of **claim 16**, which has the structure:



24. An antimicrobial composition comprising,
 (a) a protonated compound comprising the structure:



or



wherein X and Z are end blocking groups, wherein V and Q are independently selected from the group consisting of O, S, P-H, P-OH, P-alkyl, P-aryl, N-H, - OH, - alkyl, N-acyl and N-aryl and W is any moiety connectable at that position; and further wherein the compound comprises one or more exogenous protons; and

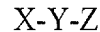
(b) an excipient.

25. The protonated compound of **claim 24**, wherein W is an H.
26. The protonated compound of **claim 24**, wherein W is selected from the group consisting of: a pyridine, a purine, pyrazine, triazine, 2-aminoadenosine, theobromine, caffeine, theophylline, uric acid, indole, acridine, indazole, phenoxazine, phenazine, phenothiazine, quinoline, isoquinoline, quinazoline, pteridine, caprolactam, and a nitrogen-containing heterocyclic.

27. The protonated compound of **claim 24**, wherein Q and V are different.
28. The protonated compound of **claim 24**, wherein Q and V are the same.
29. The protonated compound of **claim 24**, wherein Q and/or V is selected from the group consisting of: -CH₂-, -CH(OH)-, or -CH(OR)-;
 where R comprises an alkyl, aryl, alkenyl, alkylaryl, alkylalkenyl, arylalkenyl, alkoxyalkyl, or alkylarylalkenyl group of from 1 to about 20 carbons.

30. A method for treating a microbial infection comprising the step of: administering an antimicrobial composition comprising:

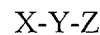
- (a) a protonated compound, said compound comprising the structure:



wherein X and Z are end blocking agents and Y is a phosphorous containing moiety with one or more protonation sites, and wherein the compound comprises one or more exogenous protons introduced to reactive sites on said molecule; and

- (b) an excipient.

31. A sanitizing composition, comprising a protonated compound, said compound comprising the structure:



wherein X and Z are end blocking agents and Y is a phosphorous containing moiety with one or more protonation sites, and wherein the compound comprises one or more exogenous protons introduced to reactive sites on said molecule.

32. The sanitizing composition of **claim 31**, further comprising a metal salt of a carboxylic acid.

33. A surface having a coating of an antimicrobially effective amount of a protonated compound, said compound comprising the structure:



wherein X and Z are end blocking agents and Y is a phosphorous containing moiety with one or more protonation sites, and wherein the compound comprises one or more exogenous protons introduced to reactive sites on said molecule.

34. The surface of **claim 33**, wherein the surface comprises a bandage.
35. The surface of **claim 33** wherein the surface comprises a medical instrument.
36. A method for sanitizing a surface, comprising treating the surface with the composition of **claim 31**.